AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A misfire detector of an internal combustion engine utilizing a crankshaft capable of rotating ~~at different rotation periods~~, the detector comprising:

a map for storing misfire determination values as a basis for determining engine misfiring, the map adopting a plurality of crankshaft rotation periods as parameters such that each misfire determination value is associated with one of the plurality of crankshaft rotation periods;

means for computing an engine speed fluctuation quantity, according to an engine speed, for a predetermined period of time; and

means for detecting a misfire according to the stored misfire determination values and the ~~calculated~~ computed engine speed fluctuation quantity.

2. (currently amended) The misfire detector according to claim 1, wherein the engine speed fluctuation computing means ~~ca-lculates~~ calculates an engine speed difference between a present engine speed and a prior combustion stroke of consecutive combustion strokes of the engine every time the crankshaft makes one rotation, and wherein the engine speed fluctuation computing means calculates the engine speed fluctuation quantity for a predetermined period of time according to a present and a prior calculated engine speed difference.

3. (currently amended) The misfire detector according to claim 2, wherein the engine speed fluctuation computing means ~~calcula- tes~~ calculates an engine speed difference between same phase engine speeds of present and last combustion strokes of consecutive combustion strokes every time the crankshaft makes one rotation.

4. (currently amended) The misfire detector according to claim 1, wherein each of the ~~engine~~ crankshaft rotation periods is calculated according to a latest measured time that the crankshaft takes to make one rotation.

5. (original) A misfire detector for an internal combustion engine of a vehicle, comprising:

means for detecting rotational fluctuation values of the engine;

means for learning variation values of the rotational fluctuation values detected by the rotational fluctuation detecting means;

means for determining from the variation values learned by the learning means and the rotational fluctuation value detected by the rotational fluctuation detecting means to determine whether the engine is misfiring;

a random access memory (RAM) for storing the learned value; and

a rewritable nonvolatile memory for storing the learned value, wherein the learned value stored in the RAM is rewritten every time the learning means computes a new learned value; and

wherein the learned value stored in the nonvolatile memory is rewritten only on a predetermined condition.

6. (original) The misfire detector according to claim 5, wherein the learned value stored in the nonvolatile memory is rewritten every time the engine has run once or a predetermined number of times.

7. (original) The misfire detector according to claim 5, wherein the learned value stored in the nonvolatile memory is rewritten every time a predetermined period of time passes or every time the vehicle has run a predetermined distance.

8. (original) The misfire detector according to claim 5, wherein the learned value stored in the nonvolatile memory is rewritten every time a misfire is detected.

9. (currently amended) The misfire detector according to claim 5, wherein the RAM has a backup power supply supplied with a voltage from ~~the~~ a battery mounted in the vehicle.

10. (original) The misfire detector according to claim 9, wherein if the data stored in the RAM is erased when the battery is removed, the learned value stored in

the nonvolatile memory is written in the RAM when the backup power supply of the RAM is restored.

11. (currently amended) The misfire detector according to claim 5, wherein the learned value stored in the nonvolatile memory is rewritten when ~~the~~ an ignition switch of the vehicle is turned off, and wherein the stored value is written in the RAM during the initialization performed immediately after the ignition switch is turned on.

12. (new) A method of detecting a misfire of an internal combustion engine utilizing a crankshaft, the method comprising:

storing misfire determination values in a map as a basis for determining engine misfiring, the map adopting a plurality of crankshaft rotation periods as parameters such that each misfire determination value is associated with one of the plurality of crankshaft rotation periods;

computing an engine speed fluctuation quantity, according to an engine speed, for a predetermined period of time; and

detecting a misfire according to the stored misfire determination values and the computed engine speed fluctuation quantity.

13. (new) The method according to claim 12, wherein an engine speed difference between a present engine speed and a prior combustion stroke of consecutive

combustion strokes of the engine is calculated every time the crankshaft makes one rotation, and wherein the engine speed fluctuation quantity for a predetermined period of time according to a present and a prior calculated engine speed difference is calculated.

14. (new) The method according to claim 13, wherein an engine speed difference between same phase engine speeds of present and last combustion strokes of consecutive combustion strokes is calculated every time the crankshaft makes one rotation.

15. (new) The method according to claim 12, wherein each of the crankshaft rotation periods is calculated according to a latest measured time that the crankshaft takes to make one rotation.

16. (new) A method of detecting a misfire in an internal combustion engine of a vehicle, the method comprising:

detecting rotational fluctuation values of the engine;

determining variation values of the detected rotational fluctuation values;

determining from the determined variation values and the detected rotational fluctuation value whether the engine is misfiring;

storing the determined value in a random access memory (RAM); and

storing the determined value in a rewritable nonvolatile memory, wherein the determined value stored in the RAM is rewritten every time a new determined value is

computed; and

wherein the determined value stored in the nonvolatile memory is rewritten only on a predetermined condition.

17. (new) The method according to claim 16, wherein the determined value stored in the nonvolatile memory is rewritten every time the engine has run once or a predetermined number of times.

18. (new) The method according to claim 16, wherein the determined value stored in the nonvolatile memory is rewritten every time a predetermined period of time passes or every time the vehicle has run a predetermined distance.

19. (new) The method according to claim 16, wherein the determined value stored in the nonvolatile memory is rewritten every time a misfire is detected.

20. (new) The method according to claim 16, wherein the RAM has a backup power supply supplied with a voltage from a battery mounted in the vehicle.

21. (new) The method according to claim 20, wherein if the data stored in the RAM is erased when the battery is removed, the determined value stored in the nonvolatile memory is written in the RAM when the backup power supply of the RAM is restored.

22. (new) The method according to claim 16, wherein the determined value

stored in the nonvolatile memory is rewritten when an ignition switch of the vehicle is turned off, and wherein the stored value is written in the RAM during the initialization performed immediately after the ignition switch is turned on.